

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 10

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte ANTHONY J. SUPPELSA, RICHARD J. KOLCZ,  
CARL M. THIELK, and BRANKO AVANIC

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Appeal No. 1998-3045  
Application 08/612,693<sup>1</sup>

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ON BRIEF

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Before McKELVEY, Senior Administrative Patent Judge, and LEE and MEDLEY,  
Administrative Patent Judges.

LEE, Administrative Patent Judge.

**DECISION ON APPEAL**

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's rejection of appellants' claims 1-15. The real party in interest is Motorola, Inc.

**References relied on by the Examiner**

Tanaka et al. (Tanaka)	Patent No. 4,725,925	Feb. 16, 1988
Neumann et al. (Neumann)	Patent No. 5,122,620	Jun. 16, 1992

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<sup>1</sup> Application for patent filed March 8, 1996.

Appellants' own disclosed prior art from page 1, line 10 to page 2, line 15, and lines 17-24 and 29-31 of page 3.

### **The Rejection on Appeal**

Claims 1-15 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over the disclosed prior art in view of either Tanaka or Neumann.

### **The Invention**

The claimed invention is directed to a substrate having a circuit pattern on the top side of the substrate, an electrically adjustable trim pad on the bottom side of the substrate and a plurality of surface mount connections on the bottom side. Representative claims 1 and 11 are reproduced below:

1. A C5 substrate having an electrically adjustable trim pad on a side, comprising:

a substrate having a top side and a bottom side;

a circuit pattern on the top side;

a trim pad on the bottom side; and

a plurality of surface mount connections on the bottom side, each comprising a C5 solder bump, at least one of the plurality of surface mount connections electrically connected to the circuit pattern on the top side.

11. A module having an electrically adjustable trim pad on a bottom side, comprising:

a substrate having a top side and a bottom side;

a circuit pattern on the top side;

an RF shield attached to the top side, the RF shield covering at least a portion of the circuit pattern;

a trim pad on the bottom side, electrically connected to the circuit pattern, the trim pad located directly below the RF shield;

a plurality of surface mount connections on the bottom side, each comprising a C5 solder bump, at least one of the plurality of surface mount connections electrically connected to the circuit pattern on the top side; and

at least a portion of the plurality of surface mount connections surrounding the trim pad.

### **Opinion**

The rejection of claims 1-15 is reversed.

A reversal of the rejection on appeal should not be construed as an affirmative indication that the appellants' claims are patentable over prior art. We address only the positions and rationale as set forth by the examiner and on which the examiner's rejection of the claims on appeal is based.

The examiner states: "As admitted by Applicants, the disclosed prior art shows the claimed structure having all of the features claimed except for the claimed location of the trim pad." The so called "disclosed prior art" apparently refers to the appellants' own disclosed prior art which is a part of the stated ground of rejection, i.e., page 1, line 10 to page 2, line 15, and page 3, lines 17-24 and 29-31. We have read the cited portions of the specification and can find no such admission from the appellants. It is one thing to say that the appellants have admitted that certain elements were known in the art, which

admission then leads to the examiner's view as to what the only differences are between the appellants' claimed invention and the prior art, and quite another to state that the appellants have admitted to what the only differences are between the claimed invention and the prior art. What we have here is only the former, not the latter.

The appellants have argued the claims together as a whole and pointed out only two differences between the claimed invention and both Neumann and Tanaka, (1) that the references do not disclose positioning trim pads on the bottom side of the substrate, and (2) that the references do not teach the placement of C5 solder bump connections on the bottom side. However, with respect to the use of C5 solder bumps on the bottom side of the substrate, the appellants have ignored its own disclosed prior art which is a part of the stated ground of rejection. On page 3 of the specification, even though it is in the section entitled "Detailed Description of the Preferred Embodiment," the appellants further discuss what was conventional or well known in the art regarding C5 solder attachments. In particular, the specification states (page 3, lines 16-24):

On the bottom side of module 10, is an array 30 or plurality of C5 solder attachments. The Controlled Collapse Chip Carrier Connection (C5) is well known in the industry and uses a plurality of precisely formed solder spheres to create the circuit interconnections between the module 10 and a mother board 40. Those skilled in the art will readily appreciate that the use of C5 spheres results in a highly controlled and uniform space being formed between the bottom of the module 10 and the top of the mother board 40. The C5 technology is renowned for its ability to control this gap while producing highly reliable solder joints. (Emphasis added.)

With regard to the use of trim pads on the bottom of the substrate, neither Neumann nor Tanaka discloses that feature. Moreover, the appellants' specification expressly states (page 3, lines 29-31):

Trim pads are well known in the industry, but are heretofore only known to be located on the top side of the substrate in the prior art.

The examiner states (answer at page 4):

However, as taught by Tanaka and Neumann, the location of the trim pad could be arranged at arbitrary position (see Tanaka) or out side of the lid, cap or shield (see Neumann). Thus, it would have been obvious to one of ordinary skill in the art to modify the disclosed prior art by adopting the teaching of Tanaka or Neumann to arrange the trim pad at any arbitrary positions on the board including on the bottom side of the board to be able to adjust microcircuits after the lid, cap or shield is installed.

The examiner has not cited to any particular portion of Tanaka or Neumann. We do not know in what section of either one of these two references the examiner believes exists a suggestion that trim pads can be placed anywhere on a substrate including on the bottom side. We also do not know which statements in the references is the examiner relying on as the starting point to arrive at the appellants' claimed invention. The examiner's conclusion is unsupported by a sufficiently identified factual basis.

Neumann's invention is directed to a chip carrier with terminating resistive elements that are integral to the chip carrier and further includes spare bonding pads and resistors

on the periphery of the carrier as insurance against defective or mistakenly removed resistors (Abstract). According to Neumann, having terminating resistors directly on circuit boards is wasteful of circuit board space (Background of the Invention). If the examiner considers entire terminating resistors on chip carriers as trim pads, no explanation has been given to justify such an interpretation. The appellants' specification appears to regard a "trim pad" as an element apart from the circuit pattern on the substrate (spec. at 2, lines 25-29). Moreover, Neumann's resistors are not on the bottom side of a substrate where C5 solder bumps are located and on the top side of which exists a circuit pattern as the appellants have claimed. Tanaka's invention is directed to a circuit board including disk-shaped resistors on one surface thereof. Tanaka does state that the resistors can be arranged at arbitrary positions on the board (column 1, lines 20-23), but if read in context the language indicates that the arbitrary positions are all located on the same side of the board. Note that in column 1, lines 8-11, Tanaka states: "In conventional circuit boards, resistors are formed on an upper surface of the board by . . . ." (Emphasis added). In column 1, lines 17-19, where problems with the prior art is described, Tanaka states: "a resistor cannot be formed at an arbitrary position on the surface of the board" (Emphasis added). Furthermore, as is the case with Neumann, the examiner has offered no explanation for apparently regarding resistors which are a part of the circuit pattern as a "trim pad" in the context of the appellants' claimed invention.

For the foregoing reasons, the examiner has failed to establish a sufficient factual

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basis stemming from the cited prior art to support the obviousness conclusion. On this record, the obviousness conclusion appears to be based solely on improper hindsight in light of the appellants' own disclosure.

Conclusion

The rejection of claims 1-15 under 35 U.S.C. § 103 as being unpatentable over the appellants' own admitted prior art and either Neumann or Tanaka is reversed.

**REVERSED**

FRED E. McKELVEY, Senior	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
JAMESON LEE	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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	)	
SALLY C. MEDLEY	)	
Administrative Patent Judge	)	

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cc: MOTOROLA INC.  
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